

CLAIMS

1. An intervertebral disc prosthesis comprising two
5 rigid half-shells in the form of cups or plates
(7, 10) which are each intended to be fixed to one
of the two vertebrae adjacent to the
intervertebral disc to be replaced, the two half-
shells enclosing a compression pad made of at
10 least two materials of different hardness,
characterized in that one (10) of the two half-
shells comprises, in its central zone, a shaft
(14) which is oriented toward the other half-shell
(7), the second half-shell (7) comprising, in its
15 central zone, a stud (13) whose cross section is
smaller than that of the shaft and which is
oriented toward the first half-shell and is
engaged in the shaft of the latter, the sum of the
lengths of the shaft (14) and of the stud (13)
20 being greater than the distance between the two
half-shells (7, 10), the compression pad being
disposed between the two half-shells, including
within the volume situated between the shaft and
the stud.
25
2. The prosthesis as claimed in claim 1,
characterized in that the volumes disposed outside
and inside of the shaft, respectively, are filled
with compressible materials (15, 16) of different
30 hardness.
3. The prosthesis as claimed in claim 2,
characterized in that the compressible material
(15) situated outside the shaft is harder than the
35 material (16) situated inside the shaft.
4. The prosthesis as claimed in claim 3,
characterized in that the compressible material
(15) situated outside the shaft (14) has a Shore A

hardness of between 60 and 100, and preferably of 80, while the compressible material (16) situated inside the shaft (14) has a Shore A hardness of between 25 and 30, and preferably of 28.

- 5
5. The prosthesis as claimed in either of claims 3 and 4, characterized in that the compressible material (15) situated outside the shaft is a synthetic material of the polycarbonate urethane type.
- 10
6. The prosthesis as claimed in either of claims 3 and 4, characterized in that the compressible material (16) situated inside the shaft is formed by a mixture of two-component silicone elastomer, crosslinking at ambient temperature, and of an encapsulating copolymer whose blowing agent is isobutane.
- 15
7. The prosthesis as claimed in one of claims 1 through 6, characterized in that the two half-shells (7, 10) are made of a titanium-based alloy.
- 20
8. The prosthesis as claimed in one of claims 1 through 7, characterized in that each half-shell (7, 10) comprises, on its outer face, points (17) intended to promote its fixation to a vertebra (2).
- 25
9. The prosthesis as claimed in one of claims 1 through 8, characterized in that each half-shell (7, 10) comprises, on its inner face, lugs (18) for attachment of the compression pad (15).
- 30
10. The prosthesis as claimed in one of claims 1 through 9, characterized in that the stud (13) projecting from a half-shell (7) is fixed by being screwed into a through-hole (12) in the latter.
- 35

11. The prosthesis as claimed in one of claims 1 through 10, characterized in that the stud (13) and the shaft (14) have a trapezoidal cross section.
- 5
12. The prosthesis as claimed in one of claims 1 through 11, characterized in that the stud (13) and the shaft (14) have, in transverse section, a non-circular cross section.
- 10
13. The prosthesis as claimed in one of claims 1 through 12, characterized in that the outer surfaces of the half-shells (7, 10) comprise a coating intended to ensure primary osseous fixation, for example a coating of hydroxyapatite or micro-porosities.
- 15
14. A method for producing the prosthesis as claimed in one of claims 3 through 5 and 10 through 13, characterized in that it involves placing the two half-shells in a mold, with the stud (13) withdrawn, injecting the material (15) of greater hardness into the volume outside the shaft (14), pouring the material (16) of lesser hardness into the volume inside the shaft (14) via the opening (12) which is formed in the half-shell (7) and is intended to receive the stud (13), and then fixing the stud (13) in place by screwing.
- 20
- 25